

CLAIMS

1. Multilayer elastomeric material comprising at least two outer barrier layers L_1 and L_3 , respectively having a breaking stress σ_1 and σ_3 and a thickness e_1 and e_3 , enclosing at least one intermediate layer L_2 consisting of an elastomeric matrix comprising at least one dispersion of droplets of at least one composition containing at least one active substance, the said intermediate layer L_2 having a breaking stress σ_{2Tot} and a thickness e_2 , characterized in that the mean diameter of the said droplets is greater than or equal to 10 μm and that the said material satisfies the following double inequality (I):

$$(\sigma_{2Tot} \cdot e_2) < (\sigma_1 \cdot e_1) \text{ and } (\sigma_{2Tot} \cdot e_2) < (\sigma_3 \cdot e_3) \quad (\text{I})$$

in which inequality:

- σ_{2Tot} represents the breaking stress of the charged elastomeric material constituting the layer L_2 ,
- σ_1 , σ_3 , e_1 , e_2 and e_3 are as defined above.

2. Material according to Claim 1, characterized in that the product $(\sigma_{2Tot} \cdot e_2)$ corresponds to the following double condition (II):

$$(\sigma_{2Tot} \cdot e_2) \leq (\sigma_1 \cdot e_1)/2 \text{ and } (\sigma_{2Tot} \cdot e_2) \leq (\sigma_3 \cdot e_3)/2 \quad (\text{II})$$

in which σ_1 , σ_{2Tot} , σ_3 , e_1 , e_2 and e_3 have the same meanings as those given in Claim 1.

3. Material according to Claim 1 or 2, characterized in that the breaking stresses σ_1 , σ_2 and σ_3 of each of the layers of the said material, which may be identical or different, range between 0.1 and 100 MPa.

4. Material according to any one of the preceding claims, characterized in that the thicknesses e_1 , e_2 and e_3 of each of the layers of the said material, which may be identical or different, range between 25 and 500 μm .

5. Material according to any one of the preceding claims, characterized in that the mean diameter of the said droplets is between 10 and 100 μm .

6. Material according to any one of the preceding claims, characterized in that the elastic constant of the constituent material of the intermediate

layer L_2 is greater than those of the barrier layers L_1 and L_3 (E_1 and E_3), i.e. $E_2 > \max(E_1, E_3)$.

7. Material according to Claim 6, characterized in that the elastic constants of each of the layers L_1 , L_2 and L_3 , i.e. E_1 , E_2 and E_3 , respectively, are
5 between 0.1 and 50 MPa; the values of E_1 and E_3 being identical or different.

8. Material according to Claim 7, characterized in that the elastic constants of the layers L_1 and L_3 , which may be identical or different, are between 0.1 and 10 MPa and the elastic constant of the layer L_2 is between 0.5 and 50 MPa.

9. Material according to any one of the preceding claims,
10 characterized in that the elastomer(s) constituting the outer barrier layers L_1 and L_3 and also the intermediate layer L_2 are chosen from natural rubber, polybutadiene, polyisoprene, polychloroprene, polyurethane, acrylic polymers or copolymers, silicone elastomers, SBR (*Styrene Butadiene Rubber*) copolymers, SBS (*Styrene Butadiene Styrene*) copolymers, isobutene-isoprene copolymers such as butyl rubber,
15 NBR (*Nitrile Butadiene Rubber*) copolymers, x-NBR (carboxylated Nitrile Butadiene Rubber) copolymers, SIS (*Styrene Isoprene Styrene*) copolymers or SEBS (*Styrene Ethylene Butylene Styrene*) copolymers and blends thereof.

10. Material according to Claim 9, characterized in that the said elastomers are chosen from SIS (*Styrene Isoprene Styrene*) and SEBS (*Styrene
20 Ethylene Butylene Styrene*).

11. Material according to any one of the preceding claims, characterized in that at least one of the barrier layers L_1 and L_3 , and/or the intermediate layer L_2 , also contains one or more plasticizer(s) or flexibilizer(s).

12. Material according to Claim 11, characterized in that the
25 plasticizer(s) represent(s) from 5 to 500 parts per 100 parts of elastomer constituting the layer in which they are present.

13. Material according to any one of the preceding claims, characterized in that each layer L_1 or L_3 results from the superposition of two or more sublayers of equivalent or non-equivalent chemical nature.

14. Material according to any one of the preceding claims,
30 characterized in that the active chemical substance is chosen from anticorrosion agents, lubricants, chemical markers, phase-change products, energetic-particle

(radiation) decelerators, agents with disinfecting power, odoriferous agents or moisturizers, dyes for detecting cuts, metallic particles, and mixtures thereof.

15 15. Material according to Claim 14, characterized in that the active chemical substance is chosen from biocides, biguanides, phthalaldehyde, phenolic derivatives, formaldehyde, nonionic surfactants comprising at least one polyoxyethylene sequence, hexamidine, iodinated polyvinylpyrrolidone compounds, nonionic surfactants with virucidal activity, sodium and potassium dichromates and hypochlorites, and mixtures thereof.

10 16. Material according to any one of the preceding claims, characterized in that the composition in the form of droplets also contains one or more diluents for dissolving the said active chemical substance(s).

17. Material according to any one of the preceding claims, characterized in that the composition in the form of droplets is in liquid, gelled form or contains crystalline parts.

15 18. Material according to any one of the preceding claims, characterized in that the intermediate layer L_2 is formed from a superposition of two or more intermediate sublayers each comprising a dispersion of droplets, the nature of the active substances contained in each of the said sublayers being identical or different from one sublayer to another.

20 19. Material according to any of Claims 1 to 17, characterized in that the intermediate layer L_2 is formed by a single layer containing a dispersion of droplets containing active chemical substances that are different from one droplet to another.

25 20. Material according to any one of the preceding claims, characterized in that it is in the form of gloves, finger stalls, condoms, tapes or dressings.

21. Use of at least one material as defined in any one of Claims 1 to 19, for the manufacture of protective elastomeric articles.

30 22. Use of at least one material as defined in any one of Claims 1 to 19, for the manufacture of gloves, finger stalls, condoms, tapes or dressings.